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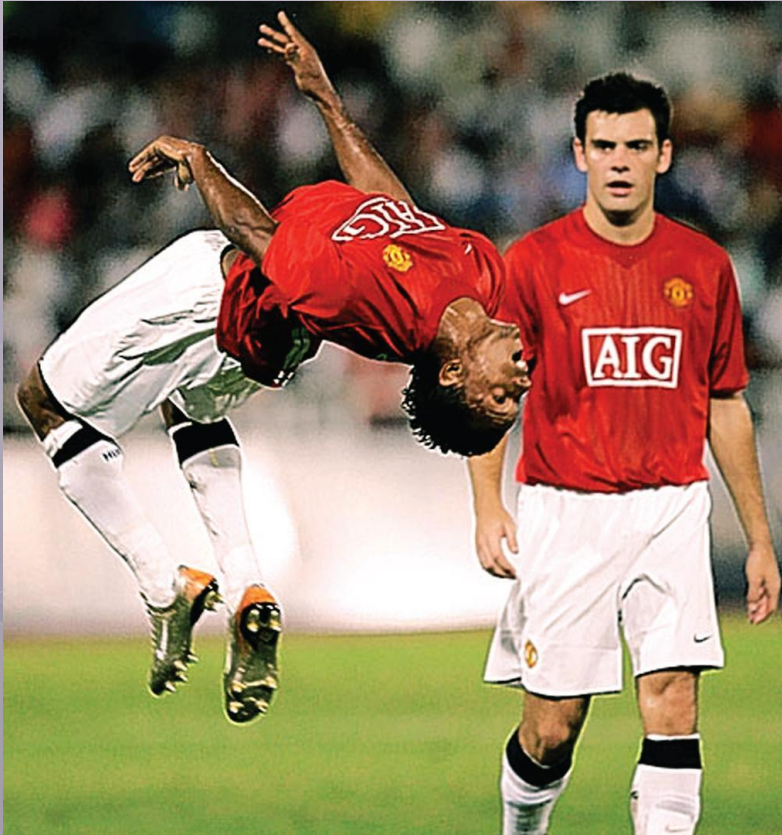


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Advancing Education Through Technology



Flipped Out!

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Your Warmup:

- **scan the QR** or go to the website listed below for a short, 2 question survey:



- tinyurl.com/flippedoutgaetc
- We will get started in a few minutes!



Who we are, what we do

- Michelle and Kitty teach science at New Manchester High School in Douglas County, GA (just west of Atlanta).
- **We are not experts!** More like novice Flippers who wanted to share our experiences with others.
- We hope you feel more informed to Flip when you leave today.



What is a Flipped Classroom?

- The “flipped” classroom (FC) teaching technique turns learning on its head.
- Students in regular classrooms experience direct instruction during the class period, and are then expected to practice the skills they learned in class at home for homework.

What is a Flipped Classroom?

- The FC teaching technique **involves learning new material at a non-classroom location**, freeing up valuable class time for practicing those skills.
- Lectures become homework and class time is used for singular/collaborative student work, experiential exercises, and lab activities.

Why Flip?

- When students have time to work in class with someone who can help them (a classroom teacher, collaborative teacher, parapro, peer tutor, etc.), they are much more likely to **learn the material to mastery.**
- The advantage of the flipped classroom is that the content (often the theoretical/lecture-based component of the lesson) becomes **more easily accessed and controlled by the learner.**

Why Flip?

- This also allows students with multiple learning styles and abilities to **learn at their own pace** and through traditional models.
- It also **totally eliminates classroom distractions** (chit-chat, texting, bad behavior, etc.) from the instructional time.



A Flipped lesson looks like...

- example: Molecular Orbital Theory lesson (www.youtube.com/user/davischem)
- Prior to lesson: students view instructional video (outside of class) and complete guided note sheet (or personal hand-written notes)
- Students turn in note sheet for accountability (accepted within one week for credit)

A Flipped lesson looks like...

- example: Molecular Orbital Theory lesson
 - 1st day: Experiential activity (lab, etc.)
 - 2nd-? days: various in-class practice activities/projects (differentiation occurs here if needed)
 - Assessment occurs mid-lesson (formative quizzes) & students not near mastery are assigned additional video instruction (outside of class)

Sample Virtual Lessons

Half-Life
the time it takes for half of a radioactive sample to decay
ex) Thallium-208 has a half-life of 3.053 min. How long will it take for 120.0 g to decay to 7.50 g?

# 1/2 Lives	Time	Amount Remaining
0		
1		
2		
3		
4		
5		
6		

$P = 1.0 \text{ atm}$
 $\Delta V = 0.50 \times 10^6 \text{ L}$
 $q = 1.3 \times 10^6 \text{ J}$ (28P)

Exercise 3 Internal Energy, Heat, and Work
A balloon is being inflated to its full extent by heating the air inside it. In the final stages of this process, the volume of the balloon changes from $4.00 \times 10^6 \text{ L}$ to $4.50 \times 10^6 \text{ L}$ by the addition of $1.3 \times 10^6 \text{ J}$ of energy as heat. Assuming that the balloon expands against a constant pressure of 1.0 atm, calculate ΔE for the process. (To convert between L · atm and J, use $1 \text{ L} \cdot \text{atm} = 101.3 \text{ J}$.)


ENTHALPY
♦ Measure only the change in enthalpy, ΔH (the difference between the potential energies of the products and the reactants)
♦ ΔH is a state function

3. Production of a gas. The evolution of gas bubbles when two substances are mixed is often evidence of a chemical reaction.

- Ex: bubbles of CO_2 gas form immediately when baking soda is mixed with vinegar; the classic middle school volcano experiment.

$\text{NaHCO}_3(\text{s}) + \text{CH}_3\text{COOH}(\text{l}) \rightarrow \text{CO}_2(\text{g}) + \text{NaC}_2\text{H}_3\text{O}_2(\text{aq}) + \text{H}_2\text{O}(\text{l})$
(baking soda) (vinegar) (carbon dioxide)

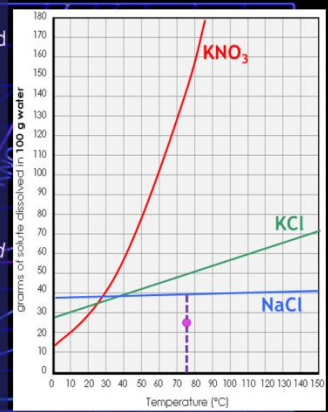
Try this one for yourself!
(Click the image to watch the video.)



Part II: Calculating from the Graph

- sometimes a question can be asked that **cannot** be answered solely from reading the graph. But **information** can be obtained from the graph to help answer the question.
- Ex5: Dissolving 25 g of NaCl in 100g H_2O at 75°C produces an **unsaturated** sol'n. How many more grams of NaCl must be added to saturate the sol'n?

1. find the maximum amount of NaCl that will dissolve at the given temp. **40 g**



Before Flipping, Consider....

- Student access to/comfort level with technology
 - Website hosting of video (public/private)?
 - Videos watched before/after school?
 - Burning to disc?
 - Special needs students

Before Flipping, Consider....

- Student/parent perceptions
 - “She’s not teaching me anymore.”
 - Lazy teacher?
- Resources
 - Administrative support
 - Supply issues (DVDs, copy limits, website hosting space)
 - Technology personnel support

Before Flipping, Consider....

- Preparation time
 - Triple whatever you think you need!
- Budget time for:
 - Lesson layout
 - Creation of video/editing (software)
 - Converting files? (wmv, mp4, avi)
 - Uploading (finding appropriate host)

Before Flipping, Consider....

- BENEFITS!

- Increased student engagement/ understanding via ability to review:
 - parts that are misunderstood,
 - need further reinforcement, or
 - those parts that are of particular interest (springboard for research).
- Sub plans are easy!
- Test review

Before Flipping, Consider....

- BENEFITS! (con't.)
 - After initial time investment, minimal prep time is needed.
 - Parents can finally see what is “**so hard**” about your class!
 - Prepares students for the collegiate environment/on the job training
 - Student/global feedback for your work
 - Ease of teacher observation documentation

The most important things

- Prep parents/students
 - Understand what flipping is/is not
 - Sample Flipping Info brochure at <http://tinyurl.com/rigdon-flip>
- There is no “correct” amount of flipping!
- It takes time for students to adapt
- Not a magical fix for classroom achievement issues
- Be **firm** and **patient**!



Several websites explain the theory behind the FC teaching model:

- www.youtube.com/watch?v=2H4RkudFzlc

This video helps explain why one of the pioneers of the FC teaching technique, Aaron Sams, switched to this method.

- www.thedailyriff.com/articles/the-flipped-class-conversation-689.php The Daily Riff is an education blog which has many articles helping educators understand the FC teaching method. There are many other FC links at the bottom of the page.



More links:

- <http://apchemistrynmsi.wikispaces.com/AP+Chemistry+Class+Lecture+Notes+AND+instructional+videos>
- <http://brightstorm.com/>
- <http://www.khanacademy.org/>
- www.youtube.com
- <http://vimeo.com>

Are there any other questions?



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